

REMARKS

Claims 1 and 3-15 are pending.

Claim 1 is an independent claim.

In an Advisory Action dated December 20, 2002, it was indicated that the "Proposed Amendments" would not be entered. Actually, there were no Proposed Amendments, but only a Request for Reconsideration. The Examiner may wish to clarify the discrepancy in the Advisory Action.

Claims 1 and 3-14 have been amended and new claim 15 has been added. The Examiner is requested to now examine these new claims.

REPLY TO REJECTIONS

First Rejection

Claims 1 and 8-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hepburn et al. (U.S. Patent No. 5,974,788, hereinafter "Hepburn") in view of Araki et al. (U.S. Patent No. 5,850,735, hereinafter "Araki"). This rejection is traversed.

Claim 1 has been amended to more particularly point out the invention. Claim 1 also includes some of the subject matter of original claim 2, which has been canceled.

In claim 1, as amended, it is specifically claimed that the "exhaust gas purifying means provided in the exhaust passage . . . said exhaust gas purifying means further having a three-way catalyst that reacts with the released NO_x . . .". (emphasis added) At least this feature is not shown in the base reference to Hepburn. That is, in previous claim 1 it was stated that the

exhaust purifying means had a function of a three-way catalyst. Now at least it is claimed that the exhaust gas purifying means has a three-way catalyst, which reacts with the released NO_x. This feature is not shown in the base reference. Additionally, the secondary reference to Araki does not cure the inherent deficiencies of Hepburn. Accordingly, a rejection under 35 U.S.C. § 103 is not viable.

For the reasons set forth above, the Examiner is requested to reconsider and withdraw the rejection of the claims under 35 U.S.C. § 103.

Second Rejection

Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hepburn in view of Araki as applied to claim 1 above and further in view of Design Choice. This rejection is traversed.

Initially, claims 3 and 4 now depend from amended claim 1. Accordingly, these claims are considered patentable at least for the same reasons as base claim 1 as explained above. Furthermore, the citation of "Design Choice" is not a reference. For the reasons set forth above, the Examiner is requested to reconsider and withdraw the rejection of the claims under 35 U.S.C. § 103.

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Third Rejection

Claims 2 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hepburn in view of Takeshima (U.S. Patent No. 5,448,887). This rejection is traversed.

Claim 2 has been canceled.

Claim 5 now depends on claim 1. This claim is considered patentable at least for the same reasons as base claim 1.

Additionally, the additional reference to Takeshima does not cure the inherent deficiencies of a rejection based on Hepburn.

For the reasons set forth above, the Examiner is requested to reconsider and withdraw the rejection of the claims under 35 U.S.C. § 103.

Fourth Rejection

Claims 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hepburn in view of Takeshima as applied to claim 5 above and further in view of Design Choice. This rejection is traversed.

As set forth above, the rejection based on the two references does not establish obviousness. Also, the use of Design Choice is improper. Design Choice is not a reference.

The assertion of what one skilled in the art would have recognized is truly speculation.

For the reasons set forth above, the Examiner is requested to reconsider and withdraw the rejection of the claims under 35 U.S.C. § 103.

NEW CLAIM

New claim 15 has been added. This claim is dependent on claim 1 and is considered allowable at least for the same reasons as base claim 1.

SUMMARY

In all the rejections under 35 U.S.C. § 103, there has been no *prima facie* case of obviousness established.

CONCLUSION

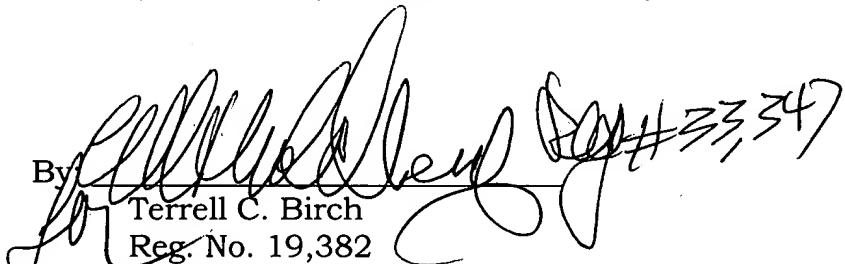
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Elliot A. Goldberg (Reg. No. 33,347) at the telephone number of (703) 205-8000, to

conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully Submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The claims have been amended as follows:

1. (Four Times Amended) An exhaust gas purifying apparatus of an internal combination engine, comprising:

a light-off catalyst provided in an exhaust passage and having an O₂ storage capability such that said light-off catalyst passes, therethrough, at least one of HC and CO in an exhaust gas to a downstream side of said light-off catalyst when the internal combustion engine is operating under a condition where the oxygen concentration of the exhaust gas is reduced; and

exhaust gas purifying means provided in the exhaust passage at a downstream of and in series with said light-off catalyst, said exhaust gas purifying means having a NO_x catalyst for, having a function of a three-way catalyst provided in an exhaust passage of the internal combustion engine, for absorbing adsorbing NO_x in the an exhaust gas when an air-fuel ratio of the exhaust gas is lean, and means for releasing or reducing the adsorbed absorbed NO_x when the an oxygen concentration of the exhaust gas is reduced, said exhaust gas purifying means further having a three-way catalyst that reacts with the released NO_x; and

— a light off catalyst provided upstream of the exhaust gas purifying means in the exhaust passage, said light off catalyst having a lower O₂ storage capability than said exhaust gas purifying means;

— the light off catalyst and the exhaust gas purifying means are in an exhaust passage in series so that all the exhaust gas from the engine passes through both the light off catalyst and the exhaust gas purifying means regardless of the engine operation modes; and

control means for reducing the oxygen concentration in the exhaust gas such that said at least one of HC and CO that has passed through said light-off catalyst controlling the air/fuel ratio of the exhaust gas so that an atmosphere having a reduced oxygen concentration is introduced produced to said NO_x catalyst around said exhaust gas purifying means when an NO_x conversion efficiency of the NO_x catalyst exhaust gas purifying means is decreased;

— wherein a substance decreasing the NO_x conversion efficiency of the exhaust gas purifying means is released during operation of said control means and is converted by said function of the three way catalyst of the exhaust gas purifying means.

5. (Twice Amended) The exhaust gas purifying apparatus as defined in claim 12, wherein the light-off catalyst has the an oxygen storage capability of a first value and the three-way catalyst of the exhaust gas purifying means has, having a function of a three way catalyst has an oxygen storage capability of a second value which is greater than said first value.

6. (Twice Amended) The exhaust gas purifying apparatus as defined in claim 5, wherein an amount of oxygen adsorbed on the three-way catalyst of said exhaust gas purifying means, ~~having a function of a three-way light-off catalyst is not greater than about 150 cc per one-liter volume of the catalyst when measured by an oxygen pulse method.~~

7. (Twice Amended) The exhaust gas purifying apparatus as defined in claim 6, wherein an oxygen component stored in the three-way catalyst of said exhaust gas purifying means, ~~having a function of a three-way light-off catalyst is not greater than about 25g per one-liter volume of the catalyst.~~

10. (Amended) The exhaust gas purifying apparatus as defined in claim 1, wherein the exhaust gas purifying means is are a single catalyst.

11. (Twice Amended) The exhaust gas purifying apparatus as defined in claim 10, wherein the single catalyst of the exhaust gas purifying means includes a function of the as a three-way catalyst.

12. (Twice Amended) The exhaust gas purifying apparatus as defined in claim 10, wherein the light-off catalyst includes a single catalyst that functions as the a three-way catalyst.

13. (Amended) The exhaust gas purifying apparatus as defined in claim 12, wherein the exhaust gas purifying means further functions also as the an NOx catalyst.

14. (Amended) The exhaust gas purifying apparatus as defined in claim 13, wherein the light off catalyst functions also as an SO_x catalyst.